prodotes Dyar	*cataphylla* Dyar
Group *curriei*	
campestris D. & K.	*callithotrys* Dyar
curriei Coq.	*canadensis* Theob.
albifasciatus Macq.	
Group *stimulans*	
excrucians Walk.	*aloponotum* Dyar[1]
mutatus Dyar	*increpitus* Dyar
fletcheri Coq.	*stimulans* Walk.
mercurator Dyar	*cantator* Coq.
fitchii F. & Y.	*mimesis* Dyar
palustris Dyar	*riparius* D. & K.
grossbecki D. & K.	*squamiger* Coq.
Group *thibaulti*	
thibaulti D. & K.	
Group *trichurus*	
trichurus Dyar	*cinereoborealis* F. & Y
poliochros Dyar[1]	
Group *innuitus*	
innuitus D. & K.	*nearcticus* Dyar

[1] Male unexamined and position of species not verified.

It is intended to treat of these groups separately as opportunity serves.

THE AMERICAN AEDES OF THE STIMULANS GROUP

(Diptera, Culicidæ)

By HARRISON G. DYAR

The species of this group inhabit temperate North America, Europe, and Asia. As far as this holarctic region is concerned, they may be defined as *Aëdes* of the subgenus *Heteronycha* with white rings at the bases (only) of the tarsal joints. This marking is repeated in other subgenera of *Aëdes* and in *Heteronycha* also in Australia; but for the region in question it is distinctive.

The species are not separable in all cases on the coloration of the female adults; but the male hypopygium is character-

istic. The larvæ also show good characters. The basis of classification adopted is the male hypopygium. The larvæ show a different series of adaptations. The present study is confined to the American forms, leaving the European ones aside, both as to their relations to each other and to the American ones.

The adults divide into three series: 1. *excrucians;* 2. *stimulans;* 3. *fitchii.* Series 1 contains the species *excrucians* and *increpitus;* series 2, *fletcheri, stimulans,* and *cantator;* and series 3, *fitchii, riparius, grossbecki,* and *squamiger.*

The larvæ of series 2 have the air-tube stout and fusiform with broad tracheæ, as is usual in the genus, elongated only in *fletcheri;* figured, *fletcheri,* Monog., ii, pl. 117, fig. 403, 1912; *stimulans,* Monog., ii, pl. 63, 1912; *cantator,* Monog., ii, pl. 67, 1912.

Series 1 has the air-tube of the larva of this same type as to *increpitus* (Ins. Ins., Mens., v, pl. ii, *"sansoni,"* 1917); but *excrucians* has the "long-tubed" type, in which the outer half of the air-tube is narrowed and the tracheæ reduced in width (Monog., ii, pl. 65, *"abfitchii,"* 1912).

In series 3 most of the species have the "long-tubed" type of larva (*fitchii,* Monog., ii, pl. 64, 1912; *riparius,* unknown; *grossbecki,* Monog., ii, pl. 69, 1912); but *squamiger* has reverted to the "short-tubed" type (Monog., pl. 122, fig. 422, 1912).

The peculiarities of the air-tube are an adaptation to habits, the long-tubed type being adapted to pools containing vegetation of a semipermanent character, the short-tubed type to open, transient pools. Since differences in habit are one of the most potent factors and conditions of specific differentiation, these larval characters are excellent indices of specific validity; but being essentially adaptational, they do not form a guide to phylogenetic relationships, for which the hypopygium seems well adapted.

As to coloration, the primitive marking has been retained in some members of all the series, the name-species, *excrucians, stimulans,* and *fitchii* being practically indistinguishable. In

series 1, no change has occurred. In series 2, *fletcheri* has assumed a yellow color and become indistinguishable from *riparius,* with which it flies in the Canadian prairies, while *cantator* has the markings dulled and the tarsal rings narrowed, till it closely resembles the wholly unrelated *vexans* Meigen. This in adaptation to its salt-marsh habitat. In series 3, *riparius* has become yellow, as noted above, while *grossbecki* and *squamiger* have acquired distinctive enlarged wing-scales, upon which an author was induced to found a genus.[1] Of these two, *grossbecki* maintains a precarious existence in the east along the Atlantic region, while *squamiger* is a salt-marsh form of the Pacific coast, to which habitat it has frankly abandoned itself, in larval structure as well.

In the following table, based on the male hypopygium, the first insert indicates the series, the second the species, the third the subspecies, under which latter heading the forms will be discussed.

Basal lobe of the side piece without a spine or tuft of setæ, flat; apical lobe with short normal setæ, pointed inwardly (series 1).

1. Rugose area of basal lobe reaching up to apical lobe, *excrucians* Walker
2. Rugose area of basal lobe not reaching beyond middle of side-piece.
   Filament of claspette angularly expanded beyond middle; spines of ninth tergites longer.....*increpitus* Dyar
   Filament of claspette angularly expanded toward base; spines of ninth tergites shorter.....*mutatus* Dyar

Basal lobe with a strong distinct spine, free, accompanied by few setæ; lobe flat; apical lobe with normal setæ, pointed inward (series 2).

3. Basal lobe rugose nearly to apical lobe; filament of claspette angularly expanded at basal third....*fletcheri* Coquillett
4. Basal lobe round, not longer than broad, rugose; filament of claspette expanded at middle.
   Setæ of apical lobe coarser than the ordinary vestiture, *mississippii* Dyar
   Setæ of apical lobe about the same size as the vestiture, *classicus* Dyar, *stimulans* Walker
   Setæ of apical lobe distinctly weaker than the vestiture, *albertæ* Dyar

[1] *Lepidoplatys* Coquillett, Science, n. s., xxlii, 314, 1906.

Setæ of apical lobe very small and short....*mercurator* Dyar

5. Basal lobe a small setiferous area next to the spine; filament of claspette thick, angularly bent in middle, *cantator* Coquillett

Spine of basal lobe strong or weak, accompanied by many setæ; basal lobe conical; apical lobe with short, slightly thickened, somewhat curved setæ (series 3).

6. Filament of claspette shortly and slenderly sickle-shaped, with more or less distinct basal notch.

Spine of basal lobe fairly strong; spines of ninth tergites long.....*fitchii* Felt & Young

Spine of basal lobe weaker; spines of ninth tergites long, *mimesis* Dyar

Spine of basal lobe much weaker; spines of ninth tergites very long.....*palustris* Dyar

7. Filament of claspette with a broad expansion the whole length; basal lobe highly conical, with strong spine, *riparius* Dyar & Knab

8. Filament of claspette short and smoothly widened; basal lobe moderate, with very strong spine, *grossbecki* Dyar & Knab

9. Filament of claspette long, angularly widened at middle; basal lobe moderate, with strong spine..*squamiger* Coquillett

SERIES 1

Species 1

Aëdes excrucians excrucians Walker.

Culex excrucians Walker, Ins. Saund., Dipt., 429 1856.

Culex excrucians Giles, Gnats or Mosq., 260, 1900.

Culex cantans Dyar (not Meigen), Proc. Ent. Soc. Wash., vi, 38, 1904.

Culex cantans Dyar (not Meigen), Journ. N. Y. Ent. Soc., vii, 36, 1904.

Culex cantans (No. 1) Dyar & Knab (not Meigen), Proc. Ent. Soc. Wash., vi, 143, 1904.

Culex abfitchii Felt, Bull. 79, N. Y. State Mus., 381, 1904.

Culicada abfitchii Felt, Bull. 79, N. Y. State Mus., 391c, 1904.

Culex siphonalis Grossbeck, Can. Ent., xxxvi, 332, 1904.

Culex abfitchii Dyar, Journ. N. Y. Ent. Soc., xiii, 29, 1905.

Culicada abfitchii Felt, Bull. 97, N. Y. State Mus., 475, 1905.

Culex excrucians Blanchard, Les Moust., 312, 1905.

Culex siphonalis Smith & Grossbeck, Psyche, xii, 16, 1905.

Grabhamia abfitchii Dyar, Journ. N. Y. Ent. Soc., xiii, 186, 1905.
Culex siphonalis Smith, N. J. Agr. Exp. Sta., Rept. Mosq., 243, 1905.
Aëdes abfitchii Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 193, 1906.
Ochlerotatus abfitchii Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. ser. 11, 20, 1906.
Ochlerotatus abfitchii Dyar, U. S. Dept. Agr., Bur. Ent., Circ. 72, 4, 1906.
Culicada abfitchii Theobald, Mon. Culic., iv, 328, 1907.
Culicada siphonalis Theobald, Mon. Culic., iv, 330, 1907.
Culex abfitchii Smith, Can. Ent., xxxix, 119, 1907.
Aëdes sansoni Dyar & Knab, Can. Ent., xli, 102, 1909.
Aëdes stimulans Dyar (not Speiser), Proc. Ent. Soc. Wash., xi, 149, 1909.
Aëdes riparius Gibson (in part), Rep. Ent. Soc. Ont., 1908, 109, 1909.
Culicada abfitchii Theobald, Mon. Culic., v, 296, 1910.
Culex excrucians Theobald, Mon. Culic., v, 350, 1910.
Aëdes abfitchii Morse, Ann. Rep. N. J. State Mus., 1909, 718, 1910.
Aëdes abfitchii Headlee, Bull, 276, N. J. Agr. Exp. Sta., 76, 1915.
Aëdes abfitchii Felt, 31st. Rept. N. Y. State Ent., 66, 1916.
Aëdes sansoni Howard, Dyar & Knab (in part), Mosq. N. & Cent. Am. & W. I., iv, 686, 1917.
Aëdes abfitchii Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 688, 1917.
Aëdes euedes Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 714, 1917.
Aëdes excrucians Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 862, 1917.
Aëdes sansoni Dyar (in part), Ins. Ins. Mens., v, 114, 1917.
Aëdes euedes Dyar, Ins. Ins. Mens., vi, 78, note, 1918.
Aëdes excrucians Dyar, Ins. Ins. Mens., vii, 25, 1919.
Aëdes excrucians Dyar, Ins. Ins. Mens., viii, 12, 1920.

As fully discussed in the last references quoted, this species flies in the northern forests from the Atlantic Ocean to Alaska. It avoids the open dry country, but extends southward in the eastern wooded country as far at least as New Jersey. The larvæ are found in the early spring pools, generally of some depth and containing vegetation.

SPECIES 2

Aëdes increpitus mutatus Dyar.

Grabhamia vittata Theobald (not Bigot), Can. Ent., xxxv, 313, 1903.

Grabhamia vittata Blanchard (not Bigot), Les Moust, 397, 1905.

Ochlerotatus vittata Coquillett (not Bigot), U. S. Dept. Agr., Bur. Ent., Tech. ser. 11, 20, 1906.

Grabhamia vittata Theobald (not Bigot), Mon. Culic., iv, 306, 1907.

Aëdes vittatus Dyar (in part, not Bigot), Proc. U. S. Nat. Mus., xxxii, 126, 1907.

Grabhamia vittata Theobald (not Bigot), Mon. Culic., v, 284, 1910.

Aëdes vittata Howard, Dyar & Knab (not Bigot), Mosq. N. & Cent. Am. & W. I., iv, 691, 1917.

Aëdes sansoni Dyar (not Dyar & Knab), Ins. Ins. Mens., v, 114, 1917.

Aëdes sansoni Cockerell (not Dyar & Knab), Journ. Econ. Ent., xi, 199, 1918.

Aëdes mutatus Dyar, Ins. Ins. Mens., vii, 24, 1919.

This species flies through the river valleys of the arid region from Montana to New Mexico. Though the adult is close to *excrucians* in appearance and genitalic structure, the larvæ are very different. They breed in early river-pools following the high water of spring.

Aëdes increpitus increpitus Dyar.

Aëdes vittatus Dyar (in part, not Bigot), Proc. U. S. Nat. Mus., xxxii, 126, 1907.

Aëdes increpitus Dyar, Ins. Ins. Mens., iv, 37, 1916.

Aëdes increpitus Dyar, Ins. Ins., Mens., v, 14, 1917.

Aëdes vittata Howard, Dyar & Knab (in part, not Bigot), Mosq. N. & Cent. Am. & W. I., iv, 691, 1917.

Aëdes increpitus Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 1041, 1917.

This form inhabits the Sierra Nevada Mountains of California, extends down to the coast in the forested region of Humboldt County where the mountains approach the sea, thence rather rare in the Coast Range. The larvæ live in early pools formed by rivers or the edges of lakes.

SERIES 2

Species 3

Aëdes fletcheri fletcheri Coquillett.

Culex fletcheri Coquillet, Proc. U. S. Nat. Mus., xxv, 84, 1902.
Ochlerotatus fletcheri Coquillett, U. S. Dept. Agr., Bur. Ent., Tech ser. 11, 20, 1906.
Aëdes fletcheri Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 11, 1907.
Aëdes fletcheri Knab, Smiths. Misc. Colls., Quart. iss., 1, 544, 1908.
Culex fletcheri Theobald, Mon. Culic., v, 485, 1917.
Aëdes fletcheri Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 675, 1917.
Aëdes fletcheri Dyar, Ins. Ins. Mens., v, 113, 1917.
Aëdes fletcheri Cameron, Agr. Gaz. Can., v, 557, 1918.
Aëdes fletcheri Cameron, Jn. Am. Med. Vet. Assn., liii, 633, 1918.
Aëdes fletcheri Dyar, Ins. Ins. Mens., vii, 27, 1919.

A localized form of limited distribution, found on the Canadian prairies and the forest adjoining from western Ontario to eastern British Columbia. Mr. Knab found the larvæ in early spring-pools, associated with those of *spencerii* and *curriei*, although he found that they throve best in the deeper reedy pools of a more permanent character. There is thus a tendency toward the habits of the "long-tubed" type of larva, accompanied by the appropriate modification of structure. The yellow color of the adults is probably an adaptation to the prevailing tone of the open prairie.

Aëdes fletcheri aloponotum Dyar.

Aëdes aloponotum Dyar, Ins. Ins. Mens., v, 98, 1917.
Aëdes aloponotum Dyar, Ins. Ins. Mens., viii, 27, 1920.

In the absence of a male, this form can be only tentatively placed. I am inclined provisionally to regard it as a western race of *fletcheri* inhabiting the moist Pacific Coast strip. Additional data are as follows: Lake Cushman, Washington, July 3, 4, 5, 1920 (H. G. Dyar); Hoodsport, Washington, July 6, 7, 1920 (H. G. Dyar); Ashford, Washington, August 1, 1906 (Dyar & Caudell); Nanaimo, British Columbia, August 6, 1906 (Dyar & Caudell); Mission, British Columbia, July 14, 1919 (E. Hearle); Harrison, British Columbia, June 20, 1919

(E. Hearle); Agassiz, British Columbia, May 23, 1919 (E. Hearle).

The occurrence of this form in the Fraser Valley is unexpected, and perhaps forms a transition to *fletcheri fletcheri.* The specimen from Mount Cheam, British Columbia, recorded in the monograph, is a normal *fletcheri.* On the other hand, specimens from forested Ontario have much the appearance of *aloponotum,* except for the absence of the red mesonotal integument; but these are females and may prove to be *riparius,* so that positive conclusions cannot be drawn.

SPECIES 4

Aëdes stimulans mississippii, new subspecies.

Mesonotum uniformly brownish, dark brown centrally, gray on the sides, the marking not contrasted; abdomen with basal segmental white bands; tarsi with moderate or rather narrow white rings at the bases of the joints; wings with many white scales, especially in the costal region. Male hypopygium as in *stimulans,* but the setæ on the outer lobe of the side-piece very coarse, distinctly coarser than the general vestiture.

Types, male and female, No. 22884, U. S. Nat. Mus.; Electric Mills, Mississippi, "from water in tree-stumps" (J. A. LePrince).

A southern race of *stimulans.* The peculiar habitat indicated by the single collection needs amplification.

Aëdes stimulans classicus, new subspecies.

Culex cantans Smith (not Meigen), Ent. News, xiii, 300, 1902.

Culex cantans Smith (not Meigen), Bull. 171, N. J. Agr. Exp. Sta., 24, 1904.

Culex cantans Smith (not Meigen), N. J. Agr. Exp. Sta., Rep. Mosq., 240, 1905.

Culicada subcantans Theobald (in part not Felt), Mon. Culic., iv, 324, 1907.

Aëdes subcantans Morse (not Felt), Ann. Rept. N. J. State Mus., 1909, 718, 1910.

Aëdes subcantans Headlee (not Felt), Bull. 276, N. J. Agr. Exp. Sta., 72, 1915.

Coloration as usual, the mesonotum largely dark brown. The form is described at length in Smith's "Report on the

Mosquitoes of New Jersey," pages 240–243, 1905, under the name of *Culex cantans*. The male hypopygium (figured, with insufficient enlargement, fig. 43, No. 11, of the work cited) has the apical lobe moderately haired as in *stimulans stimulans,* but the shape of the filament of the claspette differs rather conspicuously, not being long, slender and pale with an angular notch beyond the middle, but only moderately long, thick and dark, roundedly swollen about the middle.

The habits as described by Smith differ from those of *stimulans stimulans*, the larvæ being said to occur in early ground pools with leaves, associated with *canadensis.*

Characterized from one female and two males, Hudson County, New Jersey, bred from fresh-water pools near the salt marsh, May 20, 1920 (W. R. Bryce-Delaney). Type, No. 23111, U. S. Nat. Mus. Also Fort Wadsworth, New York, May 20, 1920 (through Dr. C. S. Ludlow).

Aëdes stimulans stimulans Walker.

Culex stimulans Walker, List Dipt. Brit. Mus., i, 4, 1848.
Culex stimulans Giles, Gnats or Mosq., 245, 1900.
Culex stimulans Theobald, Mon. Culic., 1, 399, 1901.
Culex cantans Theobald (not Meigen), Mon. Culic., i, 401, 1901.
Culex cantans Giles (not Meigen), Gnats or Mosq., 2 ed., 244, 1902.
Culex cantans Dyar (not Meigen), Journ. N. Y. Ent. Soc., xii, 174, 1904.
Culex cantans Felt (not Meigen), Bull. 79, N. Y. State Mus., 284, 1904.
Culicada cantans Felt (not Meigen), Bull. 79, N. Y. State Mus., 391b, 1904.
Culicada subcantans Felt, Bull. 97, N. Y. State Mus. 448, 1905.
Aëdes subcantans Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 202, 1906.
Ochlerotatus subcantans Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. ser. 11, 20, 1906.
Ochlerotatus subcantans Dyar, U. S. Dept. Agr., Bur. Ent., Circ. 72, 6, 1906.
Culicada subcantans Theobald (in part), Mon. Culic., iv, 324, 1907.
Aëdes subcantans Knab, Smiths. Misc. Colls., Quart. iss., i, 547, 1908.

Culex (Culicada) stimulans Speiser, Schr. d. Physik.-ökonom. Ges. zu Königsb., xlix, 391, 1908.

Culicada maculatus Theobald (in part, not Meigen), Mon. Culic., v, 296, 1910.

Culicada subcantans Theobald, Mon. Culic., v, 297, 1910.

Culicada subcantans de Meijere, Tidsk. v. Ent., liv, 146, 1911.

Aëdes subcantans Felt, Rept. N. Y. State Ent., 31, 66, 1916.

Aëdes stimulans Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 679, 1917.

This form inhabits the northern Atlantic region westward to the plains. The larvæ occur in early pools, especially those that have been actually overflowed by high water rather than seepage-filled. The female adult cannot be certainly distinguished from *excrucians* and *fitchii,* with which it flies.

Aëdes stimulans albertae, new subspecies.

Aëdes stimulans Dyar, Ins. Ins. Mens., viii, 12, 1920.

Mesonotum brightly marked, dark brown in broad central stripe and shaded posterior-lateral ones, the sides light yellow; abdomen with narrow basal abdominal white bands; wing-scales wholly black.

Types, two males and one female, No. 22885, U. S. Nat. Mus.; Edmonton, Alberta, Canada, May 11, 14, 17, 1919 (H. G. Dyar).

This form was bred from larvæ in early marsh-pools with other early species. The differences in the larvæ from *stimulans stimulans* have been discussed in the literature quoted.

Aëdes stimulans mercurator Dyar.

Aëdes mercurator Dyar, Ins. Ins. Mens., viii, 13, 1920.

This race inhabits the Yukon Valley in Yukon Territory and presumably in Alaska also. The larvæ are essentially as in *stimulans stimulans,* though separated from that subspecies; but the male hypopygium continues the modification, which progressively increases northwestward, of reduction of the setæ on the outer lobe of the side-piece.

SPECIES 5

Aëdes cantator cantator Coquillett.

Culex sp? (salt marsh), Smith, Ent. News, xii, 301, 1902.

Culex cantans Dyar (not Meigen), Proc. Ent. Soc. Wash., v, 47, 1902.

Culex cantator Coquillett, Can. Ent., xxxv, 255, 1903.
Culex cantator Smith, N. J. Agr. Exp. Sta., Bull. 171, 22, 1904.
Culex cantator Felt, Bull. 79, N. Y. State Mus., 293, 1904.
Culicada cantator Felt, Bull. 79, N. Y. State Mus., 391b, 1904.
Culex cantator Dyar, Journ. N. Y. Ent. Soc., xiii, 28, 1905.
Grabhamia cantator Dyar, Proc. Ent. Soc. Wash., vii, 48, 1905.
Culex cantator Smith, N. J. Agr. Exp. Sta., Rep. Mosq., 231, 1905.
Culex cantator Britton & Viereck, Rep. Conn. Agr. Exp. Sta., 1904, 268, 1905.
Culex cantator Blanchard, Les Moust., 629, 1905.
Culicada cantator Felt, Bull. 97, N. Y. State Mus., 476, 1905.
Aëdes cantator Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 200, 1906.
Ochlerotatus cantator Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. ser. 11, 20, 1906.
Ochlerotatus cantator Dyar, U. S. Dept. Agr., Bur. Ent., Circl. 72, 5, 1906.
Culex cantator Smith, Can. Ent., xxxix, 119, 1907.
Culicada cantator Theobald, Mon. Culic., iv, 334, 1907.
Culex (Ochlerotatus) cantator Viereck, 1st Ann. Rep. Comm. Health Pa., 471, 1908.
Culicada cantator Theobald, Mon. Culic., v, 301, 1910.
Aëdes cantator Morse, Ann. Rep. N. J. State Mus., 1909, 718, 1910.
Aëdes cantator Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 700, 1917.

A species of restricted local distribution, confined to the salt marshes of the Atlantic coast from Maine to Maryland. Locally abundant, but giving rise to no derivative races. The coloration of the adults is much as in *Aëdes* (*Ecculex*) *vexans* Meigen, although the two are wholly unrelated.

SERIES 3

Species 6

Aëdes fitchii fitchii Felt & Young.

Culex cantans Johannsen (not Meigen), Bull. 68, N. Y. State Mus., 419, 1903.
Culex cantans (No. 2) Dyar & Knab (not Meigen), Proc. Ent. Soc. Wash., vi, 143, 1904.
Culex fitchii Felt & Young, Science, n. s., xx, 312, 1904.

Culex fitchii Felt, Bull. 79, N. Y. State Mus., 281, 1904.
Culicada fitchii Felt, Bull. 79, N. Y. State Mus., 391c, 1904.
Culex fitchii Dyar, Journ. N. Y. Ent. Soc., xii, 246, 1904.
Culex fitchii Felt, Bull. 97, N. Y. State Mus., 451, 1905.
Culicada fitchii Felt, Bull. 97, N. Y. State Mus., 475, 1905.
Grabhamia fitchii Dyar, Journ. N. Y. Ent. Soc., xiii, 186, 1905.
Aëdes fitchii Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 199, 1906.
Ochlerotatus fitchii Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. Ser. 11, 20, 1906.
Ochlerotatus fitchii Dyar, U. S. Dept. Agr., Bur Ent., Circ. 72, 5, 1906.
Culicada fitchii Theoblald, Mon. Culic., iv, 321, 1907.
Aëdes fitchii Knab, Smiths. Misc. Colls., Quart. iss., 1, 545, 1908.
Culicada fitchii Theobald, Mon. Culic., v, 299, 1910.
Aëdes fitchii Morse, Ann. Rep. N. J. State Mus., 1909, 718, 1910.
Aëdes fitchii Headlee, Bull. 276, N. J. Agr. Exp. Sta., 88, 1915.
Aëdes fitchii Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 682, 1917.
Aëdes fitchii Dyar, Ins. Ins. Mens., vii, 26, 1919.
Aëdes fitchii Dyar, Ins. Ins. Mens., viii, 15, 1920.

This form inhabits the eastern forested region, extending to the Canadian plains, where it seems to merge into the next subspecies. The larvæ are found in the early spring pools of a marshy or semipermanent character, the adults flying until late in the summer.

Aëdes fitchii mimesis Dyar.

Aëdes abfitchii Dyar (not Felt & Young), Ins. Ins. Mens., v, 103, 1917.
Aëdes mimesis Dyar, Ins. Ins. Mens., v, 116, 1917.
Aëdes mimesis Cameron, Agr. Gaz. Can., v, 557, 1918.
Aëdes mimesis Cameron, Jn. Am. Vet. Med. Ass., liii, 633, 1918.
Aëdes mimesis Cockerell, Jn. Econ. Ent., xi, 199, 1918.
Aëdes fitchii Dyar (in part), Ins. Ins. Mens., viii, 15, 1920.

In the last quoted reference I discuss the differences shown by the western race of *fitchii* in the larvæ, but state that there is no name applicable to the form. Pending further research, I propose to apply the name *mimesis* in this sense. The type locality is Montana, the larvæ undescribed. I take the general habitat to include the Rocky Mountain region from Montana to the Yukon Valley.

Aëdes fitchii palustris Dyar.

Aëdes palustris Dyar, Ins. Ins. Mens., iv, 89, 1916.
Aëdes palustris var. *pricei* Dyar, Ins. Ins. Mens., v, 16, 1917.
Aëdes (?) incrcpitus Dyar, Ins. Ins. Mens., v, 98, 1917.
Aëdes palustris Dyar, Ins. Ins. Mens., viii, 27, 1920.

This form inhabits the Californian mountains, the Olympics and Vancouver Island, and is probably continuous in the Coast Ranges through Oregon and Washington. It has not been found in the Cascade Range.

SPECIES 7

Aëdes riparius riparius Dyar & Knab.

Aëdes riparius Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 213, 1907.
Aëdes riparius Gibson (in part), Rep. Ent. Soc. Ont., 1908, 109, 1909.
Aëdes riparius Theobald, Mon. Culic., v, 485, 1910.
Aëdes riparius Howard, Dyar & Knab, Mosq. N. & Cent. Am. & W. I., iv, 712, 1917.
Aëdes riparius Dyar, Ins. Ins. Mens., v, 113, 1917.
Aëdes riparius Dyar, Ins. Ins. Mens., vii, 27, 1919.

A species of very local distribution. The only known locality is Winnipeg, Manitoba, other localities being doubtful in the absence of males. The female adults are practically indistinguishable from *fletcheri*. The larva is unknown.

SPECIES 8

Aëdes grossbecki grossbecki Dyar & Knab.

Culex squamiger Smith (not Coquillett), N. J. Agr. Exp. Sta., Bull. 171, 37, 1904.
Culex squamiger Smith (not Coquillett), Ent. News, xv, 80, 1904.
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A rare and local species, taken in scattered localities from New Jersey to Mississippi.

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A local species, confined to the salt marshes of the Pacific coast from San Francisco to San Diego. It is probably to be considered as a derivative of *grossbecki;* but the differentiation is clearly of a specific degree.

THE LARVA OF AEDES CAMPESTRIS DYAR & KNAB

(Diptera, Culicidæ)

By HARRISON G. DYAR

Discovery of this larva was made in April, 1920, in the salt marshes at Garfield, Utah, a station about 15 miles from Salt Lake City. The marshes contain much grass, the water being derived from seepage from mineral springs, and distinctly saline and unpleasant to the taste. The larvæ associated in the marshes consisted of a small percentage of *niphadopsis* D. & K., the remainder being *curriei* Coq. and *campestris* D. & K., the latter present in about 15 per cent of the early emergencies.

Larva. Head rounded, about as broad as long, light yellowish; hairs, upper in threes (varying from two to four), lower single and large. Antennæ moderate, spinulated, the tuft at the middle. Skin glabrous. Lateral comb of the eighth segment a patch of about 24 broadly oval scales, fringed with coarse spinules, uniform, except that the terminal spine occasionally appears stouter than the rest, but slightly. Air-tube about three times as long as wide, conically tapered, pecten reaching somewhat beyond the middle, of about 30 scales, evenly spaced, the last three stouter and a little more distantly placed than the others, followed by a 4-haired tuft. Anal segment with the dorsal plate reaching about the middle of the side, irregularly edged, pale. Ventral brush with four preceding tufts. Anal gills rudimentary.

The larva is similar to that of *curriei,* differing in the head hairs, which are normally both single in *curriei,* and in the pecten of the air-tube, which in *curriei* has less teeth, the terminal ones not being incrassated.